

Name: \_\_\_\_\_

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## Light Diffraction WS 5b

- To calibrate a diffraction grating, a helium neon laser is aimed through the grating. The laser light has a wavelength of 632.8 nm. When the screen is 1.000 m from the grating the first order fringe is 35.05 cm from the center dot.
  - What is the angle to the first fringe?
  - What is the distance between the lines on the grating?
  - How many lines/cm are on the grating?
  - What is the frequency of the light?
- Light passes through a grating of 4,000 lines/cm. Light appears on a screen 1.60 meters away. If the first order fringe is 34.0 cm from the center, what is the wavelength of the light?
- For a diffraction grating to spread light of 700 nm to an angle of  $30.0^\circ$ , what should the lines/cm be for the grating?
- If a grating has 6000 lines/cm, what will be the angle between the first order fringe for light of 400nm and 700nm? If the screen is 100.00 cm away, how far apart will the two fringes be?